

CLAIMS

What is claimed is:

- Sub A-1 > 1. A duct joining system, comprising:
- 5 a first duct having a male end, said first duct having a first bead on said male end;
- a flexible seal and locking mechanism retained on said male end of said first duct between said first bead and an end of said first duct; and
- 10 a second duct having a female end having a first cross sectional area and a second bead of a second cross sectional area that is greater than said first cross sectional area, said second duct may be joined to the first duct by sliding said female end over said male end, said flexible seal and locking mechanism being compressed within said first cross sectional area, said flexible seal and locking mechanism expanding into said second bead to form both a seal and a mechanical
- 15 lock that provides resistance to the separation of said first duct and said second duct greater than the resistance to the joining of said first duct and said second duct.
2. The duct joining system of Claim 1, wherein said flexible seal and locking mechanism is a flexible gasket held on said male end at an angle relative to normal and away from said end of said first duct.
- 20 3. The duct joining system of Claim 1, wherein said resistance to the separation of said first duct and said second duct is at least three times greater than said resistance to the joining of said first duct and said second duct.
- 25 4. The duct joining system of Claim 1, wherein said first bead acts as a stop bead to ensure said second duct is properly positioned with said first duct when said first duct and said second duct are joined.

30

5. The duct joining system of Claim 1, further comprising a third bead on said first duct located between said flexible seal and locking mechanism and said end of said first duct, wherein said third bead has a diameter that is less than the diameter of said first bead.

5

6. The duct joining system of claim 1, wherein one of said first duct and said second duct is a fitting.

7. A duct joining system that simultaneously seals and locks the joint in place consisting of:

10

a first duct having a female end, said first duct having a first bead on said female end;

a flexible seal and locking mechanism retained within said female end of said first duct between said first bead and an end of said first duct; and

15

a second duct having a male end having a first cross sectional area and a second bead of a second cross sectional area that is less than said first cross sectional area, said second duct may be joined to the first duct by sliding said female end over said male end, said flexible seal and locking mechanism being compressed by said first cross sectional area, said flexible seal and locking mechanism expanding into said second bead to form both a seal and a mechanical lock that provides resistance to the separation of said first duct and said second duct greater than the resistance to the joining of said first duct and said second duct.

20

8. The duct joining system of Claim 7, wherein said flexible seal and locking mechanism is a flexible gasket held on said female end at an angle relative to normal and away from said end of said first duct.

25

9. The duct joining system of Claim 7, wherein said resistance to the separation of said first duct and said second duct is at least three times greater than said resistance to the joining of said first duct and said second duct.

30

10. The duct joining system of Claim 7, wherein said first bead acts as a stop bead to ensure said second duct is properly positioned with said first duct when said first duct and said second duct are joined.

5

11. The duct joining system of Claim 7, further comprising a third bead on said first duct located between said flexible seal and locking mechanism and said end of said first duct, wherein said third bead has a diameter that is greater than the diameter of said first bead.

10

12. The duct joining system of Claim 7, wherein one of said first duct and said second duct is a fitting.

13. A duct joining system that seals and locks the joint in place consisting of:
15 a first duct having a male end, said first duct having a first bead on said male end;

a flexible seal and locking mechanism retained on said male end of said first duct between said first bead and an end of said first duct; and

a flexible duct that may be joined to said first duct by sliding said flexible
20 duct over said flexible seal and locking mechanism, said flexible seal and locking mechanism expanding within said flexible duct to form both a seal and a mechanical lock that provides resistance to the separation of said first duct and said flexible duct greater than the resistance to the joining of said first duct and said flexible duct.

25

14. The duct joining system of Claim 13, wherein said flexible seal and locking mechanism is a flexible gasket held on said male end at an angle relative to normal and away from said end of said first duct.

15. The duct joining system of Claim 13, wherein said resistance to the separation of said first duct and said second duct is at least three times greater than said resistance to the joining of said first duct and said second duct.
- 5 16. The duct joining system of Claim 13, further comprising a second bead on said first duct located between said flexible seal and locking mechanism and said end of said first duct, wherein said second bead has a diameter that is less than the diameter of said first bead.
- 10 17. The duct joining system of claim 13, wherein said first duct is a fitting.
18. An apparatus comprising:
a first duct;
a second duct, wherein a portion of said first duct is inserted into a portion
15 of said second duct; and
a sealing means for providing a seal and a mechanical connection between said first duct and said second duct when said portion of said first duct is inserted into a portion of said second duct.
- 20 19. The apparatus of Claim 18, wherein said second duct has a raised bead into which said sealing means is seated to form said seal and said mechanical connection when said portion of said first duct is inserted into said portion of said second duct.
- 25 20. The apparatus of Claim 18, wherein said first duct has a depressed bead into which said sealing means is seated to form said seal and said mechanical connection when said portion of said first duct is inserted into said portion of said second duct.
- 30 21. The apparatus of Claim 18, wherein said sealing means is a flexible gasket.

22. The apparatus of Claim 21, said first duct having a first bead, said flexible gasket being mounted closer to the front of said first duct than said first bead, said flexible gasket having an angle relative to normal of said first duct.